Library System Architecture

Design the architecture of a library system.

Automated Library System

1. Patrons have library cards. In modern days, these are accounts, and when they check out a book or do anything, they can scan their card, or enter credentials to gain access.
2. Patrons check out books.
3. Patrons (and staff) can search the catalog using various criteria (author, title, genre, popularity, topic, etc.) Inside the library are stations where people can do searches. That's all they can do.
4. Patrons are notified of late books, and upcoming due dates. (Are these direct connect terminals, ChromeBooks, laptops, or what?)
5. Patrons can reserve books that are currently checked out.
6. There is some way to do inventory management, and some way to add and remove books from the inventory.
7. There are different kind of media, including physical books, magazines, DVDs, etc. And there are electronic books, etc.
8. You can do a lot of library interaction via your phone.
9. There is collaboration with other libraries. Gee, we aren't sure exactly what that means yet!
10. Patrons are fined for late media.

Hints and Considerations

1. You might identify different data types, but don't go into details about the data. Just start with the general types.
2. What are the different ways people can use the system? In the old days, there was one central checkout desk. But does that have to be the case? What are the architectural implications?
3. Part two of the same question: With electronic media to check out, the patron doesn't even have to come to the library.
4. What are the major modules? Which connect with which others? Considerations:
    a. Separation of Concerns (similar to responsibilities for each module)
    b. Appropriate coupling
5. What are typical scenarios? Walk through a couple.

Provide design documentation:

- Box and line charts
    - Be sure that you have enough detail. Two or three boxes is certainly not enough! You want the boxes and lines to guide the implementors.
    - Think about the layout. It should make sense. If you have different sizes or styles of boxes, why?

    - Make sure the meaning of the lines are clear. We will talk later about connectors later; right now do the best you can. Consider labels on the lines.

- Necessary text explanation
    - Explain all the diagrams.
    - It is often good to explain the rationale behind decisions you made. For example, there are some intentional ambiguities in the spec. (Just like real life.) You might want to explain why you resolved ambiguities the way you did.
    - The goal is that the diagrams and text provide enough information that a team could implement the system.

This is a group project.